REVIEW OF SIGNIFICENT CHANGES IN THE 2011 VIRGINIA WORK AREA PROTECTION MANUAL

Virginia Asphalt Association Conference

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VDOT Traffic Engineering Division
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• Jan 15, 2012 – Effective date for compliance as well as supplements by State and Municipal DOTs.
VA Supplement to the MUTCD

VDOT developed 3 Supplements which consist of:

- VA Supplement to the 2009 MUTCD
- VA Work Area Protection Manual (Part 6)
- VA Standard Highway Signs book
2011 VA WAPM Development

• Incorporates many TE Memorandums such as
  – WZ Speed Limit documentation
  – Slow Roll TTC
  – WZTC Training

• FHWA/VDOT WZS Team Review Findings
  – Pull-off area TTC
  – Expanded detour signing

• Recommendations from field, industry, and municipality personnel
  – Vehicle Warning Light
  – Easier to follow Appendix A

• FHWA Final Rules
  – WZS & Mobility
  – Positive Protection & Worker Safety

Received over 120 comments during the open review period.
Changes/Additions

• Applies to all roads open to the public, including private roads

• Format the same as 2005 WAPM –
  – Standards (shall conditions, bold font)
  – Guidance (should conditions, italicized font)
  – Option (may conditions, underlined font)
  – Support (informational statements, standard font)

• Each paragraph is numbered for easier reference

04 The primary function of TTC is to provide for the reasonably safe and effective movement of road users through or around TTC zones while reasonably protecting road users, workers, responders to traffic incidents, and equipment.

05 Of equal importance to the public traveling through the TTC zone is the safety of workers performing the many varied tasks within the work space.
Section 6B.01

Fundamental Principles of Temporary Traffic Control

- References the 7 fundamental principles of TTC from the MUTCD
  1. Plans should be developed to provide safety for motorists, bicyclists, pedestrians, workers, law enforcement, and equipment in TTC zones.
  2. Inhibit road user movement as little as practical.
  3. Motorists, bicyclists, and pedestrians should be guided in a clear & positive manner through the TTC zone.
  4. Conduct routine day and night inspections of TTC to provide acceptable levels of operations.
  5. Maintain roadside safety during the life of the TTC zone (provide CZ’s, reduce drop offs).
  6. Adequately train each person whose actions affect TTC safety.
  7. Maintain good public relations.
Chapter 6B – Fundamental Principles

Section 6B.01
Fundamental Principles of Temporary Traffic Control

- TTC should be reviewed on a periodic basis during nighttime conditions to ensure TTC devices meet the acceptable standards
- TTC reviews shall be performed after inclement weather
- References IIM-241/TED 351 for developing TMP’s and TTCP’s
Chapter 6B – Fundamental Principles

Section 6B.01

Fundamental Principles of Temporary Traffic Control

- TCD’s shall be removed as soon as practical when work is suspended 30 minutes or greater
- Advance warning signs and their portable supports may be stored behind barrier, guardrail or out of the construction clear zone (For Clear Zone distances, see Page A-4)
- Only individuals trained in WZTC practices shall supervise the selection, placement and maintenance of TTC devices
Section 6C.04  Advance Warning Area

Updated Table 6C-1 Spacing Advance Warning Signs

<table>
<thead>
<tr>
<th>Road Type</th>
<th>Spacing (in feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urban street with 25 mph or less posted speed</td>
<td>100' – 200'</td>
</tr>
<tr>
<td>Urban street with 30 to 40 mph posted speed</td>
<td>250' – 350'</td>
</tr>
<tr>
<td>* All Other Roadways with 45 mph or less posted speed</td>
<td>350' – 500'</td>
</tr>
<tr>
<td>All Other Roadways with greater than 45 mph posted speed</td>
<td>500' – 800'</td>
</tr>
<tr>
<td>Limited Access highways</td>
<td>1300' – 1500'</td>
</tr>
</tbody>
</table>

* Urban streets with greater than 40 mph posted speed limits fall into this category.
Section 6C.04  Advance Warning Area

In urban conditions it is generally better to attempt to place all advance warning signs within a one block area versus spreading out over several blocks, provided that motorists have time to recognize and react to the signs.
Section 6C.06 Buffer Space

- Updated spacing of the Longitudinal Buffer Space, Table 6C-2

<table>
<thead>
<tr>
<th>Posted Speed Limit</th>
<th>Distance (Feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>≤ 20</td>
<td>115 - 120</td>
</tr>
<tr>
<td>25</td>
<td>155 - 160</td>
</tr>
<tr>
<td>30</td>
<td>200 - 210</td>
</tr>
<tr>
<td>35</td>
<td>250 - 260</td>
</tr>
<tr>
<td>40</td>
<td>305 - 320</td>
</tr>
<tr>
<td>45</td>
<td>360 - 380</td>
</tr>
<tr>
<td>50</td>
<td>425 - 445</td>
</tr>
<tr>
<td>55</td>
<td>500 - 520</td>
</tr>
<tr>
<td>60</td>
<td>570 - 590</td>
</tr>
<tr>
<td>65</td>
<td>645 - 675</td>
</tr>
<tr>
<td>70</td>
<td>730 - 760</td>
</tr>
<tr>
<td>75</td>
<td>820 - 850</td>
</tr>
</tbody>
</table>

- Neither work activity nor storage or placement of equipment, vehicles (including law enforcement), or material shall occur within a buffer space.
Section 6D.03
Worker Safety Considerations

• All workers should be trained on how to work next to motor vehicle traffic in a way that minimizes their vulnerability. Workers having specific TTC responsibilities should be trained in TTC techniques, device usage, and placement, TE Memo 345 WZTC Training Requirements
Section 6D.03 & 6E.02
Beginning July 1, 2012

WORKERS, FIRST RESPONDERS, & FLAGGERS shall wear high-visibility safety apparel that meets Performance Class 3 requirements of the ANSI/ISEA 107–2010

VDOT employees required to have a minimum of 10 sq. in. retroreflectivity on headwear. This is not a requirement for contractors
Section 6D.03 (Worker) & 6E.02 (Flagger)
Beginning July 1, 2012

• Nighttime operations require workers installing and removing TTC and Flaggers to wear Type E trousers in addition to their high-visibility safety apparel that meets Performance Class 3.

• Flaggers required to wear Type E trousers in addition to their high-visibility safety apparel meeting Performance Class 3 during other low light conditions such as inclement weather (fog, rain, sleet, snow, etc.)

• Defines nighttime work zones as operations which occur from 30 minutes before sunset until 30 minutes after sunrise.
NEW:
Section 6E.04
Automated Flagger Assistance Devices (AFAD)

AFADs shall only be used when all of the following conditions are met:
• Two-lane roadway closed to one lane of traffic;
• One lane of approaching traffic in the direction to be controlled;
• ADT is 12,000 or less vehicles or as directed by the RTE;
• Operator shall be a certified flagger and must be present to operate the units;
• Operator must have an unobstructed view of AFAD and approaching traffic;
• RTE approves multiple operators and distances greater than 800 feet.
NEW:
Section 6E.05
Stop/Slow AFAD

Chapter 6E – Flagger Control
NEW: Section 6E.06
Red/Yellow Lens AFAD
Section 6E.07  Flagger Procedures

• Only uniformed law enforcement officers are allowed to direct traffic through an operating traffic signal (see Section 46.2-834 of Highway Laws of Virginia)

• A flagger shall control only one lane of traffic approaching an intersection as shown in Figure TTC-30
Section 6E.08  Flagger Station

- Flagger signs removed, covered, turned away when work is suspended 30 minutes or longer
- Illumination requirements and measurement to determine correct illumination (5 foot-candles or 50 lux)
- If glare from standard types of floodlight equipment cannot be eliminated, then consideration should be made for the use of non-glare lighting devices such as non-glare air-filled lighting devices, Section 6F.90
Section 6F.02 General Characteristics of Signs

- Sign fabrication requirements are found in MUTCD’s “Standard Highway Sign & Marking Book” and the VA Standard Highway Sign book
- Roll-up signs on portable supports only – not allowed on posts
- Rigid Material for post-mounted signs
  - Aluminum 0.100-inch thickness
  - 0.4 inch thick corrugated polypropylene or polyethylene plastic material
  - 0.079 inch thick aluminum/plastic laminate material
Section 6F.02 General Characteristics of Signs

- Orange rows are VA specific signs
- Pink rows VA Incident Management signs
- White and grey rows MUTCD signs
- Example of VA sign designations; W21-V1
- Example of VA sign designation which modifies an MUTCD sign; W20-8 (V)
Chapter 6F – TTC Zone Devices

Figure 6F-3 shows MUTCD and Virginia Signs and Plaques
Chapter 6F – TTC Devices

Sign changes – the following signs will be changing on July 1, 2014:

- W20-5
  - LEFT LANE CLOSED AHEAD
- W20-5a
  - LEFT TWO LANES CLOSED AHEAD
- W8-17
  - CENTER LANE CLOSED AHEAD
- W8-V5
  - CENTER LANE CLOSED AHEAD
- W8-17
  - CENTER LANE CLOSED AHEAD
- W8-V5
  - CENTER LANE CLOSED AHEAD
- W20-5a
  - CENTER LANE CLOSED AHEAD
- W9-3
  - CENTER LANE CLOSED AHEAD
Section 6F.03 Sign Placement

• Signs (except sidewalk closure signs operations) should not be used on portable sign supports for a duration of more than 3 consecutive days (72 consecutive hours)
• Sidewalk closure operations signs on portable sign stands shall use a sand bags on each leg weighting approximately 25 lbs
• Portable sign supports must support 20 sq. ft. sign
• The legs of portable sign supports should be as flush as possible to the ground or roadway for stability
Section 6F.04 Sign Maintenance

• Signs shall be reviewed after setup and periodically during each work shift

• Expands on covering signs when not in use with silt fence and plywood. No duct tape allowed on the face of a sign.

• Signs and their supports may be stored behind barrier, guardrail or outside the construction clear zone.
Chapter 6F – TTC Zone Devices

Section 6F.69 Arrow Boards

- Name changed from Arrow “Panel” to Arrow “Board”
- Allows Sequential Chevron arrow
- Does not allow Sequential arrow
- Shall be delineated with 4 channelizing devices

Sequential Chevron Arrow Display
Section 6F.92

Vehicle Warning Lights

- Changed from a size requirement to a performance requirement
  - Visible either day or night conditions a minimum of ½ mile on Limited Access highways or a minimum of 1500 feet on all other roadways.

- Parked vehicles should not have their warning lights in operation unless the vehicle is a perceived hazard

- Prohibits the use of flashing white lights on construction and maintenance vehicles.
Section 6F.95
Crash Cushions

• Rear panel of a TMA shall have alternate 6 to 8 inch black and orange inverted stripes.

• Shall be used in accordance with manufacturer’s specifications including weight of the support vehicle.

• The following distance of TMA’s from a hazard has been increased from 50'-100' to 80'-120'.
NEW Sections Added to Chapter 6G include:

Section 6G.13 Detours and Diversions

Section 6G.16 Work Within the Traveled Way at a Roundabout

Section 6G.24 Slow Roll Temporary Traffic Control Operations

Section 6G.25 Installing/Removing TTC
Section 6G.16 Work Within the Traveled Way at a Roundabout

- Section added to go along with new TTC layouts TTC-32, 33, and 34.

- Traffic control provided by flagger control in advanced of the roundabout.

- Accommodations for the turning radius of tractor trailer or other large vehicles should be considered when designing and installing the TTC.
NEW
Section 6G.27
Work Area Ingress/Egress Considerations

• Covers the need to plan for construction access to and from the work area.
• Requires the use of WORK VEHICLE DO NOT FOLLOW signs on the back of trucks hauling/delivering material
NEW
Section 6G.27
Work Area Ingress/Egress Considerations

• Not required on the back of pickup trucks, SUV’s, or vans which can enter/exit the WZ at higher speeds.
• Not required on one-way, two-lane operations since flaggers normally control the ingress and egress of work vehicles.
Changes:

- Redesigned every TTC Figure
- Added Twenty-Three (23) New TTC Figures
- Added 70 MPH row to Taper Tables.
- Shadow or TMA vehicle shall be in a position 80'-120' in advance of workers or the work operations vehicle.
Chapter 6H – Typical Applications
New TTC Figures include:
– Pull-Off Areas on Limited Access Highways
– Lane Closure Operations on a Two-Lane Roadway using Traffic Control Signals
– Lane Closures at Roundabouts
– Street Closure Operation with Detour
– Short Term and Long Term Roadway Detour
– Median Cross-Over Operation on a Multi-Lane Roadway
– End of Day Signing for Partial Width and Full Width Paving Operations on Multi-Lane Roadways and Two-Lane Roadways
2012 Pocket Guide

• Released with the Work Area Protection Manual
• Added references for the Manual for Assessing Safety Hardware (MASH)
• Updated terminology such as Arrow Board and TMA Vehicle distance ahead of the work crew
• Added sequential chevron to Flashing Arrow Boards
• Updated information on installing and removing lane closures
• Re-defined low-speed (30 mph)
Available On-Line At: www.virginiadot.org/business/trafficeng-WZS.asp
2011 Virginia Work Area Protection Manual
2012 Guidelines for Temporary Traffic Control
2011 Virginia Work Area Protection Manual
2012 Guidelines for Temporary Traffic Control
On-Line Order form at: www.atssa.com
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